



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/635,123	08/06/2003	Richard H. Blunk	8540G-000179	2077
27572	7590	11/16/2004	EXAMINER	
HARNESS, DICKEY & PIERCE, P.L.C. P.O. BOX 828 BLOOMFIELD HILLS, MI 48303			CREPEAU, JONATHAN	
			ART UNIT	PAPER NUMBER
			1746	

DATE MAILED: 11/16/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

10/635,123

Applicant(s)

BLUNK ET AL.

Examiner

Jonathan S. Crepeau

Art Unit

1746

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 06 August 2003.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-38 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-38 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date 12/16/03, 8/6/03
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_

## DETAILED ACTION

### *Claim Rejections - 35 USC § 103*

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1-15 and 17-38 are rejected under 35 U.S.C. 103(a) as being unpatentable over EP 1009051 in view of Petrie (*Handbook of Adhesives and Sealants*, 2000).

EP '051 is directed to a liquid cooled bipolar plate for PEM fuel cells. The plate comprises two sheet members which are bonded together with an electrically conductive adhesive (see abstract; Figures 4 and 5). Regarding claims 15 and 17-21, the adhesive comprises conductive particles in a polymer matrix. The particles can be silver, gold, nickel, platinum, graphite, carbon, nickel plated graphite, and nickel plated carbon (see claim 6 of the reference). The polymeric matrix can be an epoxy, acrylic, phenolic, silicone, polyvinyl acetate, or acetal (see claim 7 of the reference). The sheet members of the bipolar plates are made of metal, carbon, graphite, or polymer-bonded carbon or graphite (see claim 11 of the reference). In paragraph [0017], the reference teaches that the adhesive is cured at a temperature and time which vary depending on the chemical composition of the polymer matrix material. In paragraph [0018], the reference teaches that in a preferred embodiment the adhesive comprises about 20-40% by volume of the conductive particles.

EP '051 does not expressly teach that the sheets are coated with an electrically conductive primer in the bonding regions, as recited in claims 1, 22, 23, 24, and 29, nor does it teach the composition of such primers.

Petrie is broadly directed to primers and adhesion promoters. In section 7.2.2, the reference discusses primers for metal substrates adhered together with an adhesive. On page 263, the reference teaches that “[r]esins, curing agents, and additives used in primer formulation are much like adhesive or sealant formulations except for the addition of solvents or low viscosity resins to provide a high degree of flow.”

Therefore, the invention as a whole would have been obvious to one of ordinary skill in the art at the time the invention was made because the artisan would be motivated to use a primer to adhere the sheets of EP '051, such primer having substantially the same composition as the adhesive of EP '051. The motivation for using such a primer can be found throughout the disclosure of Petrie, in particular, the list at the bottom of page 255 (inhibiting corrosion, enhancing physical properties of the joint and improving bond strength). As such, the artisan would be motivated to apply a primer to the sheets of EP '051 before joining with the adhesive. It is further noted that in paragraph [0017], EP '051 teaches that “[t]he conductive adhesive may also be used to coat the entire heat exchange faces to provide corrosion protection factor,” thereby further suggesting its use to inhibit corrosion. Additionally, the composition of the primer as recited in claims 7-13 would also be rendered obvious because this composition is substantially identical to the composition of the adhesive disclosed by EP '051.

Regarding the resistance ranges recited in the instant claims, resistance values within these ranges can reasonably be expected to be present in the bonds of EP '051 employing

primers having compositions identical to the adhesives. In other words, such resistance values are a natural and expected result of using primers to adhere the sheets of EP '051. As such, the claimed resistance ranges are not considered to distinguish over the references.

3. Claim 16 is rejected under 35 U.S.C. 103(a) as being unpatentable over EP 1009051 in view of Petrie as applied to claims 1-15 and 17-38 above, and further in view of Fronk et al (U.S. Patent 6,372,376).

EP '051 does not expressly teach that the adhesive comprises polyamide imide, as recited in claim 16.

Fronk et al. is directed to contact elements for fuel cells that are coated with electrically conductive coatings. In column 5, line 3, the reference teaches that the coatings may comprise polymers such as epoxies, silicones, and polyamide-imides, among others.

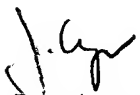
Therefore, the invention as a whole would have been obvious to one of ordinary skill in the art at the time the invention was made because the disclosure of Fronk et al. indicates that polyamide imides are functionally equivalent to epoxies and silicones when used to coat fuel cell bipolar plates. As such, the artisan would be sufficiently skilled to substitute the polyamide imide of Fronk et al. for the epoxy or silicone of EP '051. An express suggestion to substitute one equivalent component or process for another is not necessary to render such substitution obvious. *In re Fout*, 675 F.2d 297, 213 USPQ 532 (CCPA 1982); MPEP §2144.06.

*Conclusion*

4. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jonathan Crepeau whose telephone number is (571) 272-1299. The examiner can normally be reached Monday-Friday from 9:30 AM - 6:00 PM EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Michael Barr, can be reached at (571) 272-1414. The phone number for the organization where this application or proceeding is assigned is (571) 272-1700. Documents may be faxed to the central fax server at (703) 872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Jonathan Crepeau  
Primary Examiner  
Art Unit 1746  
November 12, 2004